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Archives

Short Winter Course

Maryland Agricultural College Bulletin

OCTOBER-DECEMBER, 1906

Vol. 3 No. 2

THE MARYLAND AGRICULTURAL COLLEGE

COLLEGE PARK, MARYLAND

ISSUED QUARTERLY

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TO THE FARMERS OF MARYLAND:

Do you fully realize the power for your welfare which is resident in your State Agricultural College? Throughout the length and breadth of the United States there is evident an ever widening and increasing interest in the work of the Agricultural Colleges and Experiment Stations, and the Department of Agriculture at Washington.

These instrumentalities for improving Agricultural conditions in our native land promise a bright future for the profession of Agriculture. The policies of these institutions portend for the man on the farm a position in the body politic quite different from that which he has held for several generations past.

Traditional practices are to be replaced by scientific methods. The farmer must be trained for the successful prosecution of his work, just as is the doctor, lawyer, preacher, merchant or banker. The farmer who does not accept this axiom in modern life, and who, for himself and family, persists in following blindly traditions supported only by "main strength and awkwardness," will surely find himself well in the rear of the procession before the twentieth century is out of its childhood.

We are sending you our October-December Bulletin, giving an account of the Ten Weeks Course in Agriculture. We ask from you enough of your time to carefully peruse this Bulletin. It means much to your boy. Give him the opportunity of taking this course this season. If he is in earnest, he will be greatly benefited and will desire to continue the course for another season.

The practical nature of the work in this Short Course will be most evident to anyone who will take the time to carefully read this Bulletin.

The spirit of this age is to KNOW HOW TO DO SOME ONE THING WELL. Your boy should acquire this power. It will make for his success in life, when, without this training his life's work will certainly be a failure.

The product of a man's hands is an indication of his mental training. The head, hand and heart must be trained coordinately, if the highest type of manhood is to be attained. Your College would inculcate a zeal in the man for his tools, for his work, and for his convictions as to the reciprocal obligation of his Country to him and his obligations to his Country.

It is not more work that is required, but better directed work; a better understanding of the principles which underlie the vocation.

There is great dignity in work. It is indicative of a Nation's strength to see a strong, vigorous young man, with his arms bared to his elbows, working at the laboratory table, at the lathe, at the forge, in the greenhouse and in the fields, with an equipment of mental and physical training which bodies forth in concrete form, a finely conceived thought for the betterment of the world. This kind of labor is that which blesses him who gives and him who receives. It is this kind of labor which will constitute the material out of which future Epics will be made.

Every farmer in Maryland can contribute his share toward producing such an ideal condition in his native State. Will you and your family lend a helping hand?

Fraternally yours,

R. W. Silvester,
President Maryland Agricultural College.

President's Office,
November 7th, 1906.

Maryland. University

SHORT WINTER COURSE IN AGRICULTURE.

This course will begin on Wednesday, January the 8th, 1907, and continue ten weeks, to March 19. It will be open to young men of sixteen years of age and over. The aim of the course will be to give the largest possible amount of information on strictly agricultural topics, by means of lectures, laboratory instruction and practical work in the field, orchard, greenhouse, stables, creamery and carpenter and blacksmith shops. It is not a text-book course, but the students will have the privilege of using the department libraries, and will be encouraged to put in as much of their spare time as possible in reading on subjects connected with their work.

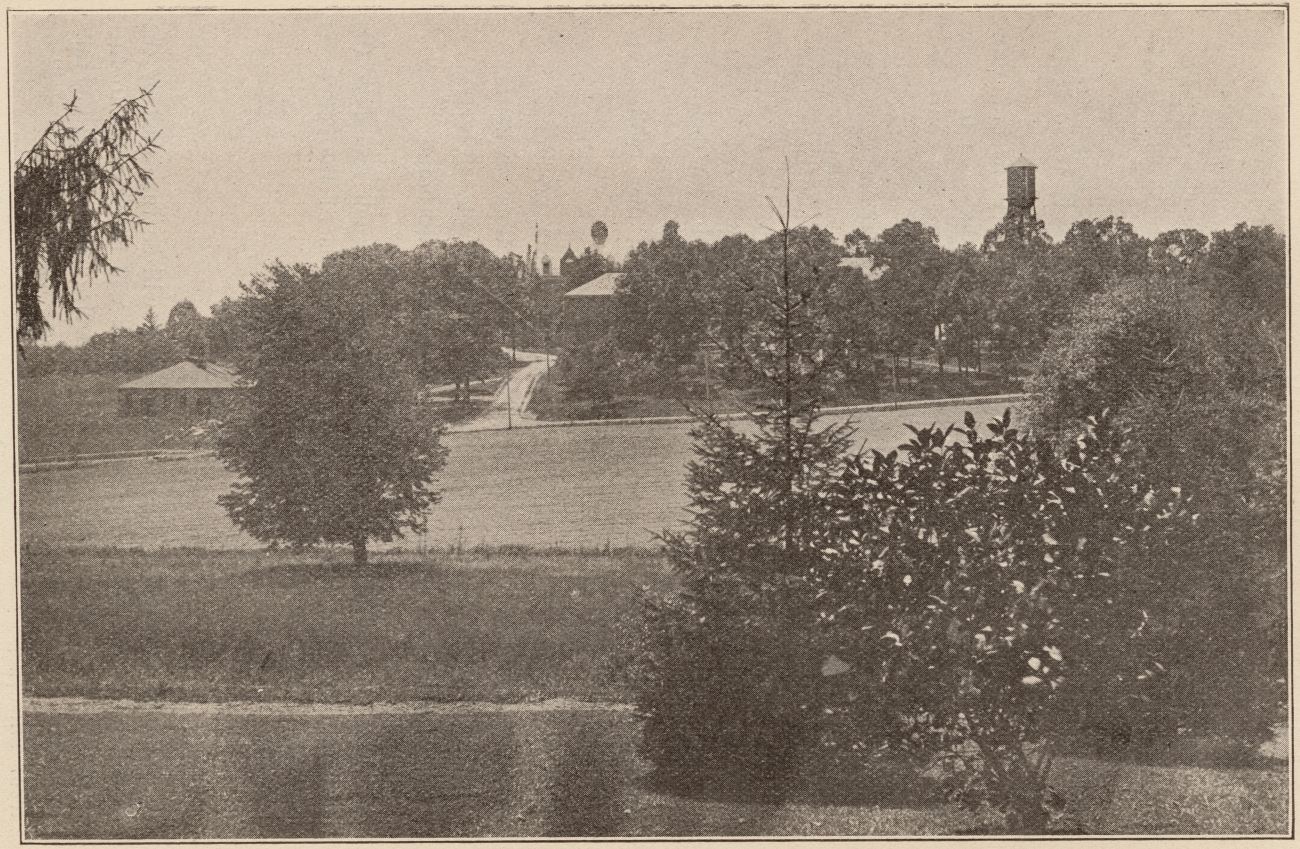
Every student will be required to take not less than two hundred and fifty hours of work. Two hundred of these will be devoted to the following specified studies:

Soils 22 hours.
Manures 20 hours.
Agricultural Chemistry, 20 hours.
Stock Feeding, 20 hours.
Farm Dairying, 20 hours.
Plant Production, 30 hours.
Farm Live Stock, 28 hours.
Horticulture, 40 hours.

The other fifty hours will be devoted to such topics as the student may elect, after consulting the synopsis of the course as outlined in the following pages.

TERMS.

Tuition and room free. Table board will be furnished by the College at four dollars a week. Students will be expected to furnish their own bed clothes, pillows, towels, napkins and overalls for dairy work. *Short course students are not required to drill or wear uniforms.*



VIEW OF COLLEGE GROUNDS FROM THE NORTH.

SYNOPSIS OF COURSE.

1. SOILS--TWENTY-TWO HOURS.

PROF. W. T. L. TALIAFERRO.

The examination and classification of soils; the relation of soils to water, air, heat; adaptation of soils to crops; improvement of physical condition of soils; drainage, ventilation, cultivation, green manures, cover crops, rotation of crops.

II—PLANT PRODUCTION--THIRTY HOURS.

HARVEST TIME IN MARYLAND.

The corn crop of Maryland in 1905, as reported by the Bureau of Statistics, made an average yield of 36.9 bushels per acre, nearly three bushels per acre more than at any time within the past ten years. It is beyond question that this increase is due in a large measure to the practice of better methods in seed selection, due to the active campaign for good seed corn carried on in recent years by the Agricultural Colleges, Experiment Stations, Farmers' Institutes and other agencies for agricultural instruction. The good results of the work so far done is an earnest of what may be done when better methods become more general and should stimulate all to renewed activity in learning and spreading the gospel of good seed corn.

Students in this course will be made thoroughly familiar by actual practice with the improved methods of selecting and testing seed corn. They will also be given full instruction in the principles and practice of breeding corn for improvement in yield and feeding value and in the most approved methods of cultivating and fertilizing this important crop.

This is a valuable and thoroughly practical course and should not be missed by any energetic young man who is or expects to be engaged in farming.

III--AGRICULTURAL CHEMISTRY--TWENTY HOURS.

DR. H. B. MCDONNELL AND MR. MORGAN.

Soils; their formation, classification and properties. The mineral constituents of soils and their bearing on plant growth. The best means of supplementing them when needed for plant growth.

IV—MANURES--TWENTY HOURS.

DR. H. B. MCDONNELL.

The best methods of preserving and applying farm manure. The relative value of the different manures and fertilizers. The maintenance of soil fertility. The place of lime in the farm economy.

V--STOCK FEEDING--TWENTY HOURS.

MR. B. E. PORTER.

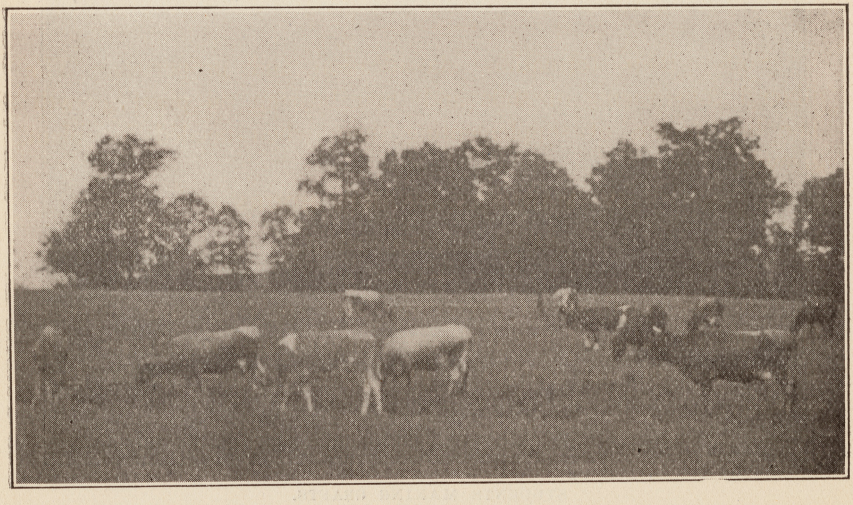
The work in Stock Feeding will cover the principles of animal nutrition, the composition of feeding stuffs, their combination into properly balanced rations and the relation between the sustenance of animals and their products. The subject will be considered under the following heads:

1. The chemical elements and compounds in feeds.
2. Function of the nutrients.
3. Digestion of food.
4. Cattle foods. Commercial feeding stuffs.
5. The selection and compounding of rations.
6. Feeding growing animals.
7. Feeding for the production of milk, meat, wool, eggs and energy, or work.

VI--FARM LIVE STOCK--TWENTY-EIGHT HOURS.

MR. B. E. PORTER.

Principal breeds of horses, cattle, sheep and hogs; their uses and adaptation; principles and practice of stock breeding; stock judging.



SOME SPECIMENS OF THE DAIRY HERD.

This section includes a thorough course in judging farm live stock, especially dairy and beef cattle. The student is taught by actual handling of the stock and the use of the score card to correctly select animals for different purposes and to accurately gauge their value for their special purpose.

VII--DAIRYING--TWENTY HOURS.

MR. B. E. PORTER.

The dairy instruction will consist of lectures on bacteriology and the necessary precautions to insure a good product; lectures on the obtaining of cream from the milk, comparing the old gravity process and the use of separators; on milk testing with the Babcock test, and the place of the test in modern dairying and on butter making, with the use of the acid test, which practically insures the making of good butter. The lectures on milk testing and butter making will be supplemented by practical instruction, and each student will be required to handle the Babcock test, as well as the separator and the churn.

VIII--HORTICULTURE--FORTY HOURS.

PROFESSOR OF HORTICULTURE.

STUDENTS MAKING GRAFTS.

A discussion of the fundamental principles of fruit and vegetable growing, orchard cultivation, fertilization, pruning, grafting, packing and marketing of fruits. The construction and management of hotbeds, cold-frames and the propagation of plants. These lectures will be supplemented by practical work in greenhouse and orchards.

IX--VETERINARY SCIENCE--FORTY HOURS.

DR. S. S. BUCKLEY.

An elementary study of the diseases of live stock should be made by everyone having charge of domesticated animals. Frequently farm animals become a source of considerable loss through neglect or unintelligent management when out of condition.

While the treatment of sick animals should rest with veterinarians trained in such work, yet the owner or manager must know when such services are needed and how to carry on such treatment intelligently when directed by the veterinarian. The effort is made in the following course of lectures to prepare the student with such knowledge and to enable him the better to understand the bulletins, reports and treatises upon veterinary subjects which he may possess:

1. Nutrition.
2. Diseases due to mistakes in feeding.
3. Infectious diseases.
4. Cattle and their common diseases.
5. The examination of a horse for soundness.
6. Lameness.
7. The foot—its care and shoeing.
8. The use of medicines and minor operations.

X--TOBACCO--FIVE HOURS.

PROF. H. J. PATTERSON.

The plant bed, culture, harvesting, curing, marketing and effects of fertilizing elements upon the quality.

XI--PLANT PHYSIOLOGY AND PATHOLOGY--FIFTEEN HOURS.

PROF J. B. S. NORTON.

STUDYING PLANT DISEASES.

Five lectures on the general principles of plant life and structure; how plants live, grow and reproduce, and how they are influenced by different conditions of light, temperature, moisture and other factors in their surroundings, considered with special reference to agricultural problems. Five lectures on the causes, symptoms and treatment of plant diseases, with practice work in examination and study of diseased plants and the preparation and use of remedies and preventatives.

This course will include the discussion of the laws of plant

life, the uses and structure of plant parts, nutrition, growth, formation of products by the plant, reproduction by seeds and otherwise, seed testing, useful plants, weeds, poisonous plants, causes of disease, parasitic fungi, preparation of fungicides and spraying.

XII—ECONOMIC ENTOMOLOGY—TWENTY HOURS.

PROF. T. B. SYMONS.

CLASS IN ENTOMOLOGY.

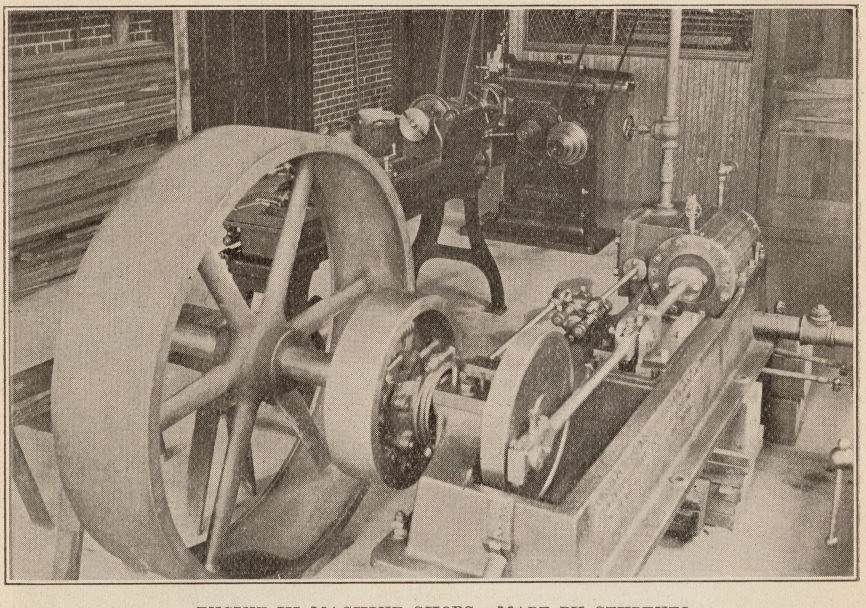
It has recently been estimated that insect injury to agricultural products amounts to over seven hundred millions of dollars each year. It is not only the actual destruction of the crops that causes loss, the effect upon the products may be to reduce the grade and make them more or less unsalable and unprofitable. These lectures are designed to treat of some of the more common pests that are responsible for this loss, with concise considerations of their life histories and habits and to discuss fully the means for control at our command.

Attention will also be given to the making and applying of insecticides.

XIII—CARPENTRY AND BLACKSMITHING—FIFTY-FIVE HOURS.

PROF. HARRY GWINNER,

ASSISTANTS, MR. GARNER AND MR. CRISP.

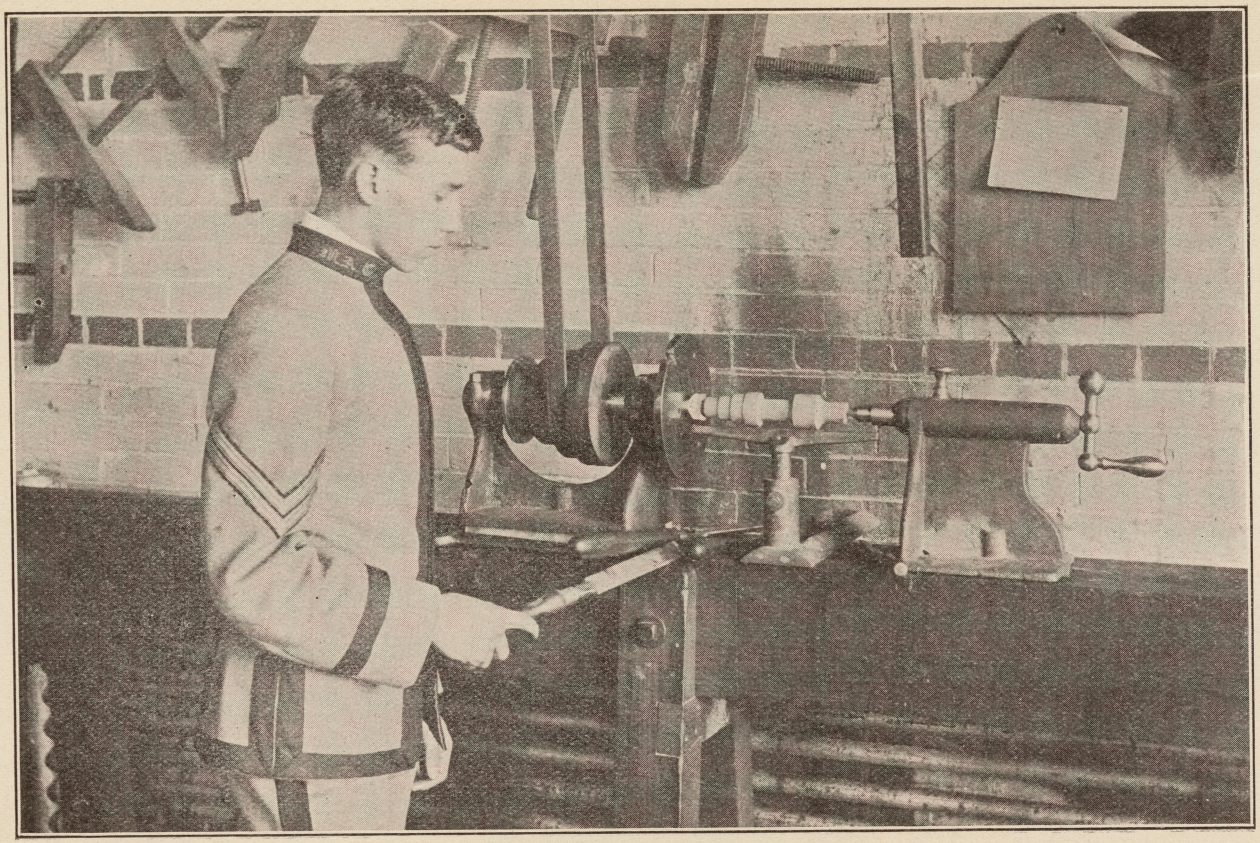


ENGINE IN MACHINE SHOPS—MADE BY STUDENTS.

A knowledge of this is very important to the agriculturist of this day. The equipment for this instruction is complete. The industrious, eager seeker after knowledge will accomplish much in the line of this work in the time allotted.

1. Sharpening of tools.
2. Adjustment of tools.
3. Sawing, planing, chiseling and boring.

Practical lessons in blacksmithing, mechanism and care of forge shop and smith's tools. Preparation of forge for fire. Building and managing the fires and fluxes. Forging, bonding, welding.



WOODTURNING.

XIV—FARM ACCOUNTS—TWELVE HOURS.

PROF. H. T. HARRISON.

A simple, concise and accurate method of keeping farm accounts. Business methods are as necessary to the successful farmer as to the merchant. Neither can do without a practical knowledge of bookkeeping.

XV—ROAD CONSTRUCTION AND LEVELING—FIVE HOURS.

PROF. HENRY LANAHAN.

A brief treatment of the principles involved and the methods used in the location, construction and maintenance of country roads.

An opportunity will be given those desiring it to learn the use of the level in laying out drains, etc. Students wishing to take the work in leveling must report to the instructor in charge within two weeks after the opening of the term.

XVI—CIVIL GOVERNMENT—TEN HOURS.

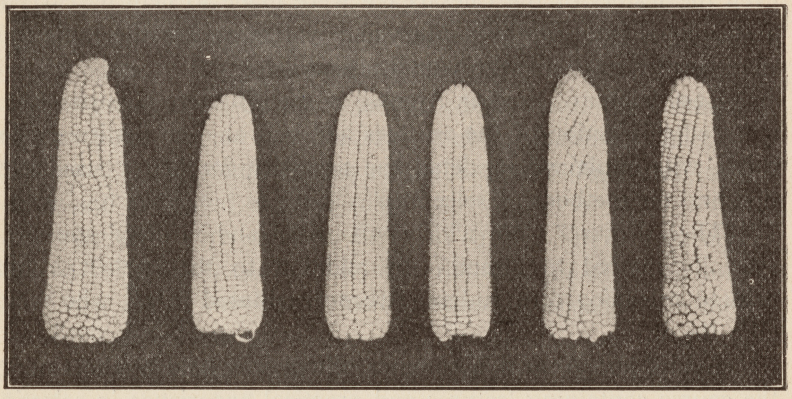
PROF. F. B. BOMBERGER.

The general principles of government; the rights and duties of citizens and an inquiry into the political institutions of Maryland.

CORN JUDGING CONTESTS.

The trustees of the Maryland Agricultural College having offered to the farmers' sons of Maryland twenty-three free scholarships to a special course of two weeks at the College, the following rules have been made to govern the competitive contests for awarding the scholarships:

The object of the scholarships being to awaken greater interest in the most important crop of the state and to help and reward those



"TYPES OF CORN EARS."

who have demonstrated their desire and ability to be helped, the selection of those to whom the scholarship shall be awarded has been wisely based upon a corn judging contest, in which the reward goes to the boy who has most profitably availed himself of the means already at his command.

For several years there has been great national interest taken in the improvement of the corn crop. The Experiment Stations, the United States Department of Agriculture and intelligent farmers in all parts of the country have made earnest efforts to the solution of the problems involved and many valuable facts have been discovered. The information thus gained has been spread

broadcast by means of bulletins, farmers' institutes, corn trains and the agricultural press.

It has been found that one of the most practical and effective means towards increasing the yield of corn is in the use of better methods of seed selection, and unusual efforts have been made to bring this fact and the means employed to the attention of farmers.

In co-operation with the great transportation companies special trains have been sent out by the Maryland Agricultural Experiment Station and the Department of Farmers' Institutes, carrying with them expert lecturers who preached the new gospel of good seed corn to thousands of farmers and farmers' boys, and even the waters of the Chesapeake were made to help by carrying a steamboat into Southern Maryland waters, where the same message was given to all who would attend.

Last winter Director Amoss, at the Farmers' Institutes, announced this action of the trustees and had at each institute a lecturer, who explained in detail the necessity for better seed selection and the methods of selecting.

These lectures were widely advertised and farmers' sons were specially invited to attend. In addition to the spoken lecture, printed rules for corn judging were distributed to all who would take them.

Again, last August a summer school was held at the College, the course containing lectures and practical experience in selecting, testing and breeding seed corn.

A particular effort was made to get the farmer boys of the state to attend this school and many availed themselves of the opportunity.

It seems, then, eminently fitting that the awarding of these scholarships should be based upon the degree to which young men have utilized past opportunities, and in so doing have demonstrated their determination to make the most of the future.

An examination of the rules governing the contest will show that every competitor will be judged absolutely on his own merits, as demonstrated in the character of his exhibit.

RULES.

1 Competition shall be limited to sons of Maryland farmers, residents of the county in which they compete.

2 No one shall compete who has had a course of instruction in an Agricultural College.

3 The competitive exhibit shall be in charge of Mr. Wm. L. Amoss, Director of Farmers' Institutes, a department of the Maryland Agricultural College, and shall be on the first day of the Annual Farmers' Institute in each county.

4 Each competitor shall exhibit ten (10) ears of corn, white or yellow, selected by himself, but not necessarily grown by himself.

5 The exhibits shall be judged by a competent judge, selected by the President of the Agricultural College and Director Amoss, and judgment shall be made in accordance with the printed scale of points in use at the Maryland Agricultural College, distributed by Director Amoss at the Farmers' Institutes last winter and appended to these rules.

6 Each exhibit of corn shall be delivered to Mr. Amoss securely done up in a box or neat parcel, with the name of the exhibitor inside in a sealed envelope, which shall not be opened until the award has been made.

7 After the judge has made his award he shall announce it to Mr. Amoss, who shall afford him an opportunity at the institute to make public his decision and the reasons therefor.

As each exhibit is opened for examination by the judge he shall give it a number, mark the same number on the outside of the sealed envelope containing the exhibitor's name. The envelope shall then be given to Mr. Amoss.

8 No one under fifteen or over twenty-one years of age will be allowed to enter the contest.

9 Each contestant must attend the day sessions of the Farmers' Institute.

10 Each specimen of premium corn will be sent by Wm. L. Amoss via express to the President of the Maryland Agricultural College for the use of the Department of Agriculture.

EXPLANATION OF POINTS IN CORN JUDGING.

MARYLAND AGRICULTURAL COLLEGE.

1 UNIFORMITY, 10 POINTS. The ten ears in the sample should possess similar characters and be true to the variety which they represent.

2 SHAPE OF EAR, 10 POINTS. The shape of the ear should conform to the variety type. The cylindrical or slightly tapering type is to be preferred as producing greatest uniformity of grain.

3 PURITY OF EAR, (a), GRAIN, 5 POINTS. Color of grain should be true to the variety and free from mixture. For one or two mixed kernels make a cut of one-fourth point, for three or four a cut of one-half point. For six or more cut one point, differences in shade of color as light or dark yellow, white or cream color must be scored according to breed characteristics.

(b), COB, 5 POINTS. A white ear with red cob or yellow ear with white cob should be marked zero. Such a mixture indicates lack of purity and a tendency to depart from the type.

4 MARKET CONDITION, 10 POINTS. Corn should be in good market and seed condition as indicated by freedom from dampness and mould, a clean, bright color, plump and well-developed grain, firmly packed around a firm well-cured cob.

5 TIPS, 5 POINTS. The tip should not taper more sharply than the ear, but should be of regular form, filled to the end with regular sized and regular shaped grains arranged in regular rows to the extremity. Flattened, divided or projecting naked tips are objectionable.

6 BUTTS, 5 POINTS. The rows should extend in regular order over the butt, leaving a cup-shaped depression when the shank is removed. Flat or unfilled butts, swelled butts or those having irregular or spreading rows are objectionable and must be cut according to judgment.

7 KERNEL, (a), UNIFORMITY OF, 10 POINTS. The kernels should be uniform in shape and size. Not only should the kernels be uniform on each individual ear, but the kernels of each ear should be uniform with those of every other ear of the exhibit. They should be true to the variety type.

(b), SHAPE OF, 5 POINTS. The kernels should be wedge-shaped, so that their edges touch from tip to crown. The tip portion is rich in protein and oil, and hence of high feeding value. A large germ is important for vigorous growth and high quality.

8 LENGTH OF EAR, 10 POINTS. The length of the ear varies according to the variety type and the ideal of the breeder, but all the ears of the exhibit should be of the same length. Where no breed standard has been established a length of from nine to ten inches may be taken as a standard. Usually ears much over ten inches long are shallow grained and unfilled at butt and tip.

9 CIRCUMFERENCE OF EAR, 5 POINTS. The circumference varies with the variety, yet there should be a relation between the circumference and the length. If the circumference is very great, there is usually a large cob which makes the ear mature slowly, often retarding the curing until the ear has been injured by frost. Where there is no variety standard the commonly adopted scale is that the circumference should be to the length as 3 is to 4. The circumference should be taken one-third the distance from the butt.

10 SPACE, (a), FURROWS BETWEEN THE TOPS OF THE ROWS, 5 POINTS. The furrows between the rows should be of sufficient size to permit the kernels to dry out readily, but not so large as to lose in proportion of corn to cob. A convenient rule is for a furrow of one-thirty-second of an inch no cut. For a furrow one-sixteenth of an inch a cut of one-half point. For more than one-sixteenth of an inch a cut of one point.

(b), SPACE BETWEEN THE TIPS OF KERNELS AT THE COB, 5 POINTS. This is highly objectionable, as reducing the weight of grain and indicating low vitality and feeding value.

11 PROPORTION OF GRAIN TO COB, 10 POINTS. To determine the proportion of grain, weigh every alternate ear of the exhibit, shell off the grain and divide the weight of the ears into the weight of the grain. The result will give the per cent. of grain. As in case of length and circumference there are variety standards for proportion of grain. Where there is no variety standard the proportion should not be less than 86 per cent. In scoring the proportion make a cut of one-half point for every per cent. below the standard.

The proportion of grain depends on the size of the cob, the length and shape of grain, maturity and dryness of ears.

MARYLAND CORN GROWING.

Six hundred and twenty-eight thousand, seven hundred and ninety-five acres of Maryland land were in corn in the year 1905. The total production was 23,202,536 bushels, representing a value of $11,137,217. The average yield per acre was 36.9 bushels. There is no question but that better methods of seed selection would increase this at least ten bushels per acre. That would add to the crop 6,287,950 bushels, worth, at the same price as above, something over three million dollars.

Is not three million dollars a sufficient incentive to the farmer boys of the State to make them take the short course at their Agricultural College, and to the fathers of the boys to undergo the slight sacrifices necessary to send their sons where they may get such useful information?

TWO WEEKS COURSE IN AGRICULTURE.

This course will begin at nine o'clock A. M., Monday, April 8, 1907, and close at four o'clock P. M., Friday, April 19th.

CRIMSON CLOVER AND HAIRY VETCH.

Owing to the time being short, it is thought best to take up a few subjects in this course and get the most possible out of them,

rather than take up many subjects and get little out of a greater number. For this reason three subjects have been selected:

CORN JUDGING, LIVE STOCK JUDGING, GROWING OF LEGUMINOUS CROPS.

These three cover the greater portion of the agricultural field.

The following schedule will be observed during the two weeks course in agriculture. In addition to this schedule, lectures will be given several nights during the two weeks on such subjects as the students may desire. Should the students wish it, some lectures and practical instruction will be given in horticulture on Saturday.

SCHEDULE FOR FIRST WEEK.

	MORNING.	AFTERNOON.
TUESDAY.	Selecting of Seed Corn. Practical work and lecture.	Selection of Dairy Cattle. Practical work and lecture.
WEDNESDAY.	Selection of Seed Corn. Practical work and lectures. Germinating test for seed corn. Practical work and lecture.	Selection of Dairy Cattle. Practical work and lecture.
THURSDAY.	Scoring Corn. Practical work. Germinating test for seed corn. Practical work.	Selection of Dairy Cattle. Practical work and lecture.
FRIDAY.	Scoring Corn. Practical work. Germinating test of seed corn. Practical work.	Use of Score Card with Dairy Cows. Practical work and lecture.

SCHEDULE FOR SECOND WEEK.

	MORNING.	AFTERNOON.
MONDAY.	Legumes as Fertilizers. Lecture. Germinating test for seeds of legumes. Practical work.	Use of Score Card with Dairy Cattle. Practical work.
TUESDAY	Legumes as Food. Lecture. Varieties of legumes. Lecture.	Use of Score Card with Dairy Cattle. Practical work.
WEDNESDAY.	Germinating Test for Seed Corn. Practical work. Legume varieties. Lecture.	Selection of Steers for Feeding. Practical work and lecture.
THURSDAY.	Germinating Test for Seed Corn. Practical. Corn Breeding. Lecture.	Selection of Steers for Feeding. Practical work and lecture.
FRIDAY.	Production of Legumes. Lecture. Corn Breeding. Lecture.	Selection of Draft Horses. Practical work and lecture.

SEED CORN GERMINATION TEST.

The covering material has been removed leaving the grains undisturbed in the box. The white roots and sprouts of the germinated grains are seen.

REQUIREMENTS FOR THE TWO WEEKS COURSE.

Boys holding scholarships for the Two Weeks Special Course will not be required to wear uniforms or attend any military duties. They will be given board, lodging and tuition free, but will be required to bring with them pillows, bed clothes and towels and will be required to look after their own rooms.

The course will be open to young men not holding scholarships. Should any such attend the course, they will be required to pay four dollars a week for table board. In all other respects they will be treated as the scholarship students.

CORN LITERATURE.

Boys who think of competing in the corn judging contest would do well, before selecting their exhibit, to study closely the scale of points for corn judging appended to the rules governing the contest.

Further information may be had from bulletins issued by the United States Department of Agriculture and various Experiment Stations, which will be sent free to all who write for them. "Corn Judging," by A. D. Shamel, is a standard work on the subject and may be had for a small price of Orange, Judd & Co., New York City.

THE WESTERN STATES.

In the Western States, where short courses at the Agricultural Colleges are offered as prizes to boys in corn judging contests, broad-minded men of means have, in many instances, aided the good work by contributing from their private means toward the payment of traveling expenses of the students. The opportunity now offers itself in Maryland. The trustees of the College have offered all they feel the College should give—free tuition, board and lodging; but, in some cases, the payment of traveling expenses is a serious matter to a boy.

Are there not men in Maryland sufficiently interested in its agricultural development to come forward and help deserving young men as is being done in the West?

AGRICULTURAL EDUCATION.

Agriculture is the oldest and most important of all industries. It is the largest in the amount and value of its products. The one in which more people are engaged than any other; the one to which nearly all others look for the raw material to keep the mill and factory running, as well as for the food to supply the tables of those who run them; the one that grants to those engaged in it freedom of thought and action and broad and symmetrical development. History and experience have proven that it is the basis of all permanent national wealth and the promoter of national virtue.

As from the earth all vegetables and plant growth spring, so the other industries rise from agriculture as a foundation, and the sciences, arts, manufactures and commerce follow as a natural and inevitable consequence.

Our agricultural resources and the progressive manner in which they are being developed are enriching the nation in an incalculable measure, and it is due to them that the balance of trade with Europe is favorable to us to the extent of millions of dollars annually. Consular reports and statistics gathered by the National and State Departments bear out these statements. How important it is, then, that a class engaged in an industry so vital to the American people and so productive of wealth to the nation should be liberally, thoroughly and technically educated. All civilized men have more or less appreciation of education and its benefits and are in some degree "educated" as the term is understood.

At present no one doubts the value of education to any class of people. In fact, nothing speaks with greater praise of this grand and glorious nation of ours than do the public schools which have been established for the development of the young, living in city, village or country lane. Go where you may into any community, county or State, and there, if agricultural education with all its new and commendable features have been taken up, the strong evi-

dences bearing testimony of the fact are the beautiful homes, improved stock and well-kept farms.

The object of education is to develop the individual, to fit him for life, to make his condition more agreeable, not only to himself, but also with those with whom he comes in contact. Education is the pathway to progress. It is the crowning glory of civilization. Now, where is the farmer who does not need these accomplishments? He is the man whose intellect and industry provides food for the world. His products renew the brain cell of the philosopher and give bloom to the maiden's cheek. Without him armies would be useless and the wheels of progress would stand still. He forms a large part of the population of an extensive community. Should not such an important element of society be invested with all that tends to direct his energies and make his efforts more effectual?

With the increase in land values comes a demand for an increase of its productiveness. "How may this be accomplished?" is the question. This question cannot be answered by a word, but by more intelligent direction, a broader knowledge of the breeds of stock, of crops and of soil, and, withal, a closer attention to details. To accomplish this, education is necessary, and, in fact, the farmer must possess qualifications that would fit him for success in almost any other field of human endeavor.

The farmer requires a broad, scientific knowledge. He deals with plants and must know botany; his range embraces animals—he must study Natural History; he must have a knowledge of Chemistry and undertsand thoroughly the principles of business. The birds are his friends, and he must protect them. At length, with all his technical knowledge, HE MUST NOT FORGET HIS CIVIC DUTIES, for throughout the country he wields a political influence which should be directed by intelligence, because it is the only guarantee of liberty.

For a long time public sentiment has been against the farmer; he has been the subject for the comic illustrator, the victim many times of the street fakir and the one at whom all sorts of epithets have been cast. All this exaggeration by press and public has had its effect upon the sensitive boy or girl, and, moreover, has been

very discouraging and harmful to the cause of agricultural education. But, nevertheless, these things are of only passing moment and do not affect young men and women of fixed purposes.

The ancient trinity of popular professions—law, ministry and medicine—no longer appeals with its old-time potency to a farm-bred boy. He finds that modern farming, in all its fullness, to be financially successful, demands the highest degree of brain efficiency. Modern science applied to agriculture has improved varieties of fruit and grains and has increased their productiveness. It has made possible the improvement of all our types of domestic animals, so that they are more useful for specific purposes. It has taught us how to combat animal and plant diseases and insect pests and how to care for the plant and the animal to secure the best development.

In the development of our improved breeds of animals, scientific knowledge of the laws of reproduction and the processes of nutrition have been essential factors. The animal becomes plastic in the hands of the skilful breeder and he is able to perfect it along lines in which it has inherited tendencies. Thus, the dairyman has developed the cow capable of producing two or three pounds of butter per day from ancestors which produced less than half as much.

Having endeavored to show in a brief way the necessity and benefits of agricultural education, let us consider some of the means by which it may be secured.

There seems to be a growing demand that everything should be taught from the standpoint of the practical in education. To a certain degree the courses in both rural and city high schools are being changed from year to year with a view to providing instruction which shall relate more closely to the requirements of the store, the workshop and the professions. In the rural schools it has been found that nature study and elementary agriculture can be taught with a considerable degree of success. This is right and proper, for in the earlier life of the pupil the world of Nature is his world. The child's earlier education is, to a large extent, in Nature study and by Nature's methods. Is there any more natural or better way

of developing boys and girls than to follow and study the laws that underlie the principles of agriculture? *"Learning those things in Nature that are best worth knowing, to the end of doing those things which make life most worth living,"* has been expressed as the purpose of Nature study.

Improvement is the slogan of the times. In the rural school improvement needs to be made, not only in the buildings and their surroundings but also in the text-books and methods of instruction. The possibilities of science and the training that comes from farm work are not suggested to the farmer's child in so many of the books. The problems in arithmetic could have a more practical application to the pupil's life on the farm and not so much to commercial and professional affairs. Would it not be better to give the boys problems like the following?

Problem 1.—Find which is more profitable of two cows for the farmer to keep, the one that gives 4,800 lbs. of milk annually and whose milk tests 4.5 per cent. of butter fat, or the cow that gives 6,000 pounds of milk annually, testing 3.8 per cent. butter fat (when one pound of butter fat is equivalent to 1 1-16 pounds of butter, butter being worth 25 cents per pound.

Problem 11.—Compute the value of a ton of fertilizer containing 7 per cent. nitrogen, 3 per cent. of potash and 8 per cent. of available phosphoric acid, nitrogen being worth 15 cents per pound, potash 6 cents and phosphoric acid 5 cents.

Prominence should be given to such words as "nitrogen," "protein," carbohydrates," "phosphates," "ringbone" and "spavin" in the spelling books. These words pertain to agriculture and rightfully belong in the rural school books.

So, in the matter of text-books, let them apply to agriculture and the farm, and then the boys and girls will see the need of education as a preparation for their life's work.

Now, for the youth who can no longer attend school, there is the agricultural press and the bulletins issued by the Department of Agriculture and by the various Experiment Stations. These bulletins are prepared by experts and no more reliable information is to be found anywhere than is given in them.

A CRIMSON CLOVER FIELD AND A CLASS IN FARM CROPS

Farmers Institutes are grand things. Here the sons and farmers see and talk with those who have had experience in their lines and are competent to impart information.

A visit to a good, clean county fair has its educational value. While there, the farmer can see what is being done in the way of improving the breeds of live stock and the different kinds of grains and grasses. He may discuss methods of breeding, the values of certain breeds of live stock for certain purposes, under known conditions, and the best way of combatting vermin and disease. And, if he has a pocket note-book, he can carry home for future reference much valuable information about live stock, grains, fruits and machinery.

Better still is a course in agriculture at a school where some of the basic principles are taught and where practical demonstrations of many valuable things are made and worked out under the eye of the student.

Some States are so aroused to the needs and benefits of agricultural education as to provide instruction in the rural schools. Others have not gone so far in their system of education, but have organized County Agricultural High Schools. Wisconsin was the first to establish one of these high schools. Then followed Minnesota, Nebraska, Oklahoma and Maine, and just recently in Alabama an Agricultural High School has been started in each Congressional District, and in Maryland, as well, we find an Agricultural High School recently established in Cecil County.

These county schools of agriculture are a new feature in the American system of education, and the interest which they have awakened among the country folk speak strongly in their favor. Again, the progress which they have made and the work which they are doing is causing the leading educators and prominent men of affairs to grow enthusiastic in their commendation. But while these schools are proving successful, there is need of all the schools being articulated into a uniform system. There should be a gradual ascendency from the primary work, through the High School to the Agricultural College. Each step in the student's education would then keep leading him on to larger and broader fields of knowledge, applicable in every respect to his life's work.

A CLASS IN STOCK JUDGING

At the State Institutions, so wisely provided for by the National and State Governments, a student can get a broader foundation and a more thorough knowledge of the underlying principles of agriculture than elsewhere. There workshops and laboratories are fitted out with the best of apparatus for personal investigation by the students, and by reason of the excellent live-stock equipment at a few of the colleges, young men are able to make a thorough study of the different breeds of live stock. They are given instruction in judging stock until they become quite expert judges of breed characteristics and of the animal form which can best perform a given work. Instruction in the judging of grains, and especially of corn, is given, and only recently large farm machine factories are helping to make up the equipment in farm machinery to aid the student in his studies and investigations.

Specialists in all lines are employed to guide the student in his work. These men are not only instructing the young, but are carrying on special work in agricultural research, the methods and results of which are carefully studied by the students.

Several different courses are provided at these State Institutions. We find the regular four courses in general agriculture or some specialized line, such as Animal Husbandry, Agronomy, Horticulture, or Dairying. Special Short Courses of two years are offered in some institutions, and, again, short winter courses are organized for the benefit of farmers in general.

At these latter schools many times corn is exhibited by individuals and Farmers' Clubs, prizes awarded for the best exhibit and judging contests are organized for boys. This bulletin gives an outline of short courses in agriculture given at the Maryland Agricultural College.

So now the way is found replete with opportunities of advancement to the young and to all who have the courage to try. Each and every young person should start out with the determination to win for himself an education—the broadest and best that he can get and one which will bring the greatest success to his calling.

No young man or young woman need hesitate about preparing for a life on the farm. The farmers' occupation will always be

permanent. Railroads and steamships may give way to aerial navigation; the ingenuity of the inventor may reduce manufacturing to a very simple matter; but, in spite of the chemist's fondest dreams, the tiller of the soil will find ready market for his products as long as the human race hungers and man is chilled by Arctic frosts and scorched by torrid suns.

B. E. PORTER,

Instructor in Animal Husbandry,
Maryland Agricultural College.